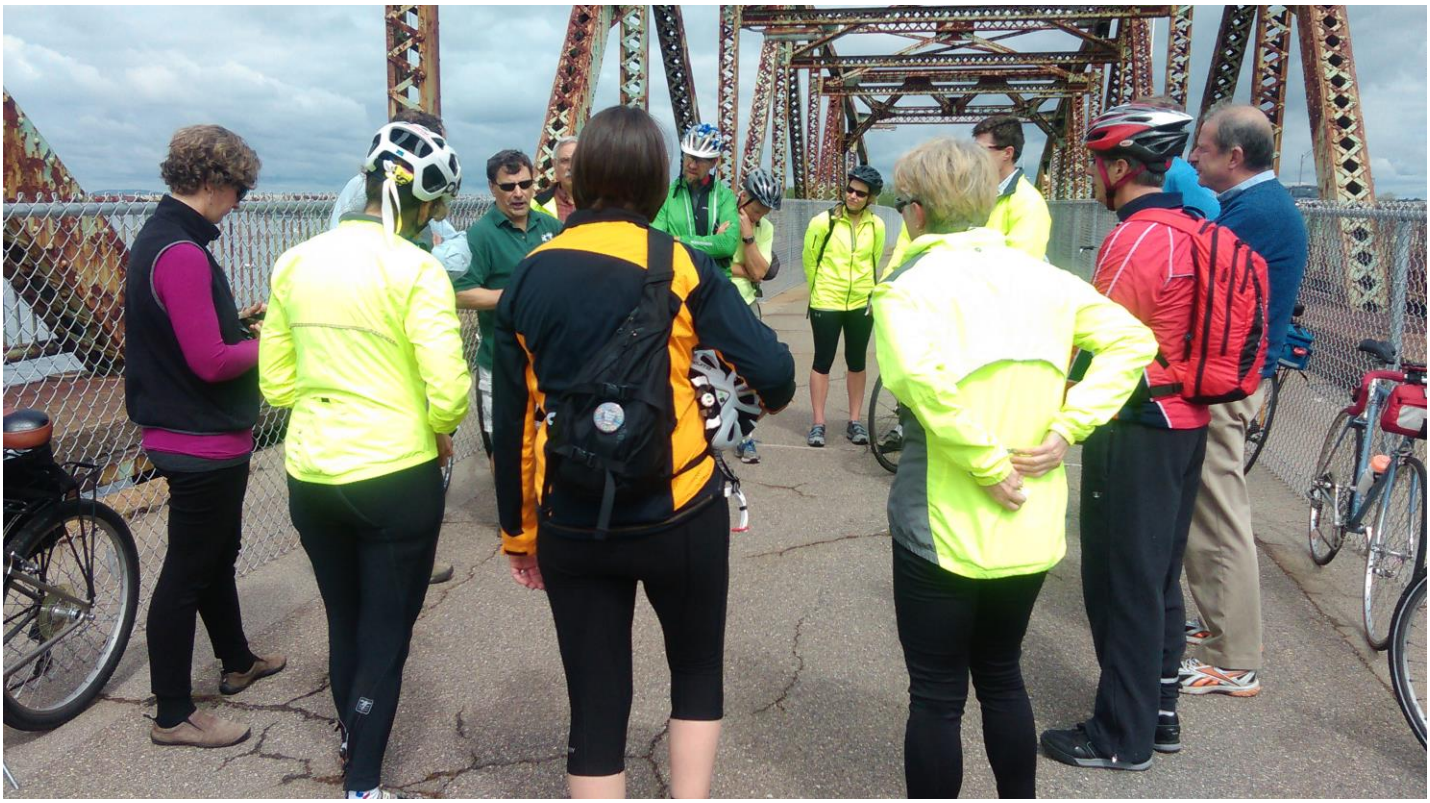
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF RAIL AND TRANSIT
DURHAM, DOVER, NEWINGTON, AND PORTSMOUTH BICYCLE TRANSPORTATION FIELD REVIEW

DATE OF FIELD REVIEW: June 3, 2015 *(updated 11-03-2016)*

LOCATION OF REVIEW: Durham, Dover Point, Newington, Greenland and Portsmouth



PARTICIPANTS:
Keith Cota, NHDOT Highway Design, Chief Project Manager
Steve Pesci, University of New Hampshire, Campus Planning – Facilities
Juliet Walker, City of Portsmouth, Transportation Planner
Rick Taintor, City of Portsmouth Planning Director
Tom Morgan, Town Planner, Town of Newington
Liz Durfee, Regional Planner, Strafford Regional Planning Commission
Scott Bogle, Senior Planner, Rockingham Regional Planning Commission
Ann Rugg, Manager, CommuteSMARTseacoast, Coop. Alliance for Seacoast Transportation
Jennifer Murphy, Lonza Biologics Process Development Scientist, Barrington commuter
Aaron Hubbell, Lonza Biologics Manager, Training and Development, Durham commuter
Diane Gibbons, Papa Wheelies Inventory logistics and Human Resources
Jon Mullen, Sig Sauer, Senior Manufacturing Engineer and Nottingham Commuter
Bill Fisk, Granite State Wheelmen Safety and Education & experienced bicycle commuter
Tim Blagden, Bike Walk Alliance of New Hampshire, Executive Director
Brian Fruh, PaxWorld, VP of Information Technology and Dover commuter
Bill Kennedy, Granite State Wheelmen and commuter from Dover
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SUBJECT: Bicycle Transportation Field Review - Durham, Dover, Newington, and Portsmouth

Notes on Review: On June 3, 2015, stakeholders met at the Memorial Union Building on the University of NH Campus. Participants field reviewed the following sites:

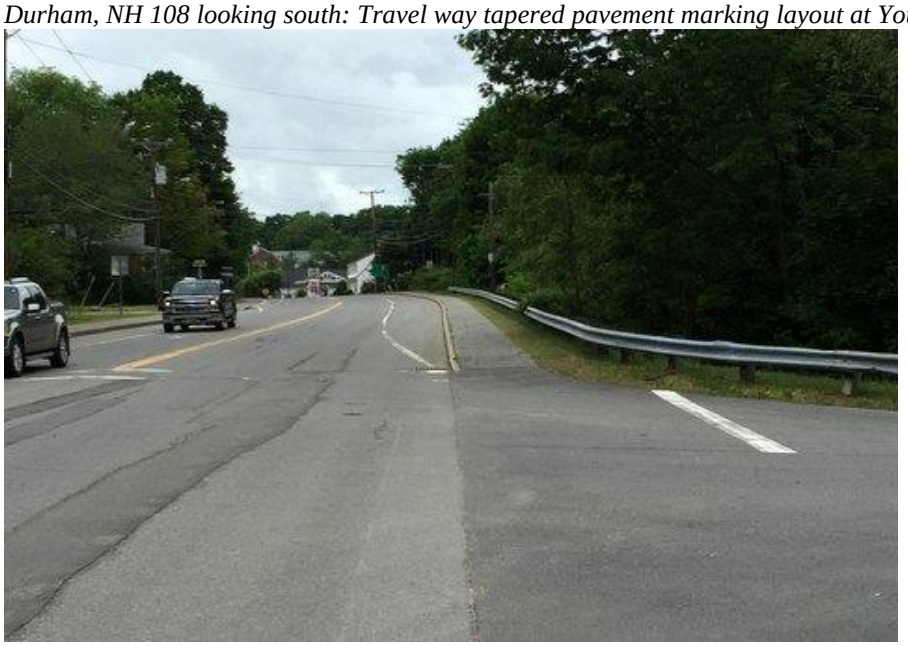
Main Street, Durham looking west.

Steve Pesci discusses the shared use lane that Durham repurposed from a former bicycle lane following October, 2014 bicycle dooring crash and fatality

Steve Pesci discussed the steps that the Town of Durham has taken to respond to the October 2014 dooring fatality on Main Street. The cyclist killed in October was operating eastbound in the designated 5-foot +/- wide bicycle lane when a parked motorist opened his car door to exit, causing a catastrophic crash that killed the cyclist. Because of the potential for dooring, the AASHTO Guide for the Development of Bicycle Facilities recommends a bike lane width of 7 feet when that bicycle lane is adjacent to a parking lane with frequent turnover. Following the October 2014 crash, the Town opted to maintain 2 travel lanes of eastbound traffic but obliterated the line marking for the bicycle lane in front of the incident area (Huddleston Hall) and instead placed shared-use lane pavement markings in the middle of the outer travel lane. The shared-use lane pavement markings indicate to motorists and bicyclists that the lane is not wide enough for a motor vehicle to pass a bicycle.

Durham and the University have seen almost 2,000 new student beds built in Durham. Almost all of the new 'dorm –work' trips are made on foot, bike or transit. Despite the increased size of the university community, there have been seven years of declining commuter parking permit sales. In some categories, commuter student parking permits are half of what they were 10 years ago. As the University community continues to expand, there will be increased stimulus to re-purpose existing automobile parking and travel space for higher, better and more efficient uses. Steve noted that UNH already has over 3,000 bike parking spaces on campus and the bike racks are full. With a university community of 15,000 people, this means that there is 1 bicycle space for every 5 people in the UNH community.

Durham, NH 108 looking south: Travel way tapered pavement marking layout at Young Drive intersection



NH 108 Looking west along NH 108 where the travel way tapers to box out the shoulder space at the Young Drive Intersection.

The applicable Traffic Standard Plans for the Department's shoulder taper practice can be found at http://www.nh.gov/dot/org/projectdevelopment/highwaydesign/standardplans/documents/2010_pm-7.pdf (Intersection Details) and http://www.nh.gov/dot/org/projectdevelopment/highwaydesign/standardplans/documents/2010_pm-9.pdf (Pavement Marking at Minor Intersections).

Steve Pesci: The applicable standard drawing for the travel taper sacrifices shoulder space. The standard calls for the taper to occur only at intersection departures but is also sometimes seen at intersection approaches along both state and municipally-maintained highways. The standard also calls for a 30-inch gap between the pavement edge and the line but the gap is sometimes less than 30 inches as demonstrated at the NH 108/Young Drive intersection. Steve felt that the design should prioritize the full integrity of the bike/pedestrian shoulder space lane instead of designing and marking for motor vehicle speed and acceleration

Comments: Informed by Steve Pesci's agenda item, the NHDOT Bicycle and Pedestrian Transportation Advisory Committee's Lane Marking Subcommittee Report includes a recommendation to eliminate the travel lane taper practice.

Looking west. Old Piscataqua Road terminates prior to reaching US 4.

Old Piscataqua Road ends short of US 4. If there was interest in the Town of Durham, it appears that a trail connection from the end of the road to US 4 might be feasible. The connection could provide eastbound cyclists from Durham with less exposure to US 4 highway traffic and a motor-free shortcut to US 4.

Portsmouth to Durham bicycle traffic from points east would have a safety challenge during the hours when US 4 traffic volumes are high.

Review US 4Bunker Creek Bridge

Durham, US 4 - Looking west at US 4 bridge over Bunker Creek. Jennifer Murphy turns around as Keith Cota points toward a crest vertical curve to the east of the bridge and the Morgan Way intersection.

The existing Bunker Creek bridge and roadway causeway are 30 feet wide and are striped with 12 foot wide lanes and 3 foot wide shoulders. The proposed bridge will be 34 feet wide and the Department plans to mark 12 foot wide travel lanes and 5-foot shoulders. The bridge carries about 16,000 vehicles per day.

The project will also modify the profile of Route 4 to improve sight distance along the road and from the Morgan Way intersection. The maximum grade on Route 4 to the east of the bridge will remain about the same (approximately 6%).

Two alternatives are being considered for maintaining traffic while the new bridge is being constructed. One alternative is to construct a temporary bridge and roadway diversion immediately to the north of the existing bridge, and the second is to close Route 4 at the bridge site and detour traffic using other existing highways. The closure alternative would only be considered if it is determined that the new bridge can be constructed in a relatively short time frame (approximately 2 weeks) using accelerated bridge construction techniques. Ongoing design efforts will determine if this is feasible at this site. The project specific information, including graphics of both alternatives are available on the project webpage at http://www.nh.gov/dot/projects/durham16236/index.htm.

The project is currently scheduled to begin construction in 2019.

Comments:
Jon Mullen: Can the terminal end unit design be more forgiving for a bicyclist who is run off the road into this terminal by speeding traffic? (See terminal in picture below, which is similar to terminal units all along US 4)

General Sullivan Bridge, Newington

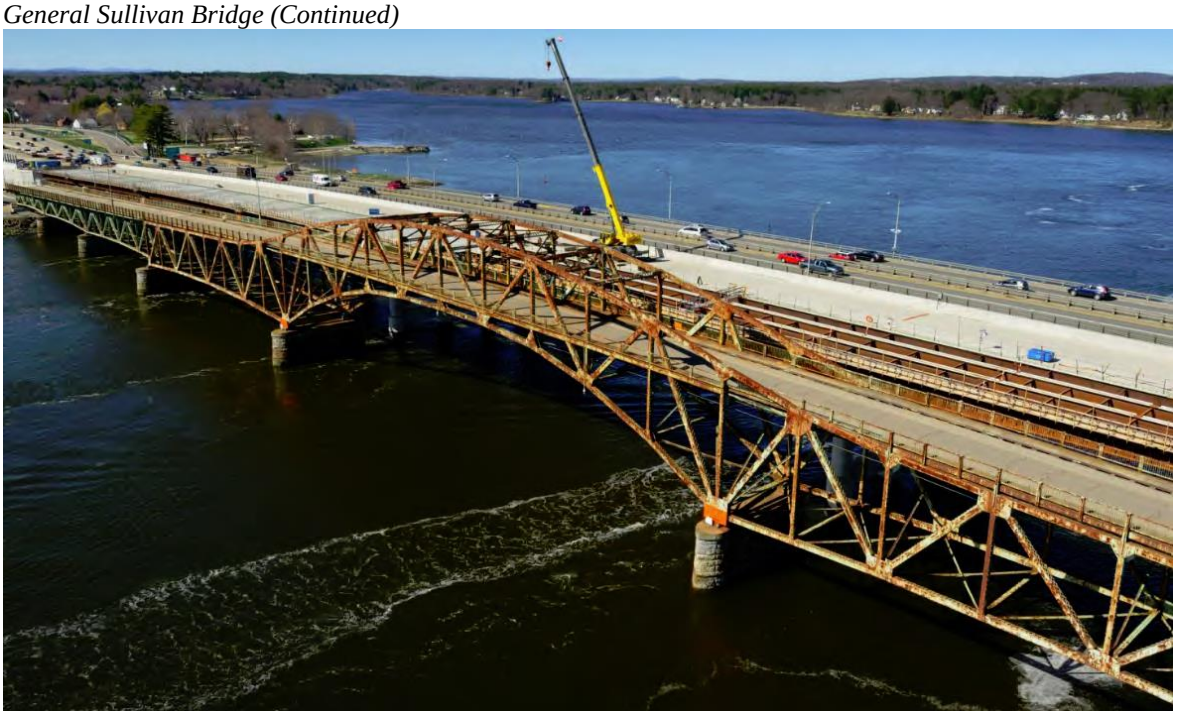
NHDOT Chief Project Manager Keith Cota discusses Spaulding Turnpike project

The General Sullivan Bridge is part of the larger Newington Dover reconstruction of the Spaulding Turnpike.
The General Sullivan Bridge Work To Date includes:
First Detailed Inspection Completed in 2009
Underwater Inspection Completed in 2011
New Dover Approach Bridge Constructed in 2013 (Contract L)
Dover Abutment Rehabilitated 2013 (Contract L)
In-Depth, Hands-On Inspection Completed in May 2014
Capacity Load Rating Completed September 2014

Preliminary Results from 2014 Inspection
Deterioration Continues -Worse than 5 Years Ago
Deck Concrete Significantly Spalled on Underside
Outside Stringers CriticallyDeteriorated
Interior Three Stringers in Fair to Good Condition
Floor Beams Fair to Poor
Span 7 (previously fenced) Span -Truss Limited Capacity
Lattice Trusses for All Other Spans Fair to Poor

General Sullivan Bridge -Next Steps
Detailed Structural Analysis/Evaluation Continues
Evaluate Environmental Commitments (Historic Preservation) –Fall 2015
Assess Rehabilitation/Replacement Options -Winter 2015-2016
Develop Rehabilitation or Replacement Plans –2016-2017
Follow-up Inspection in 2016

General Sullivan Bridge (Continued)



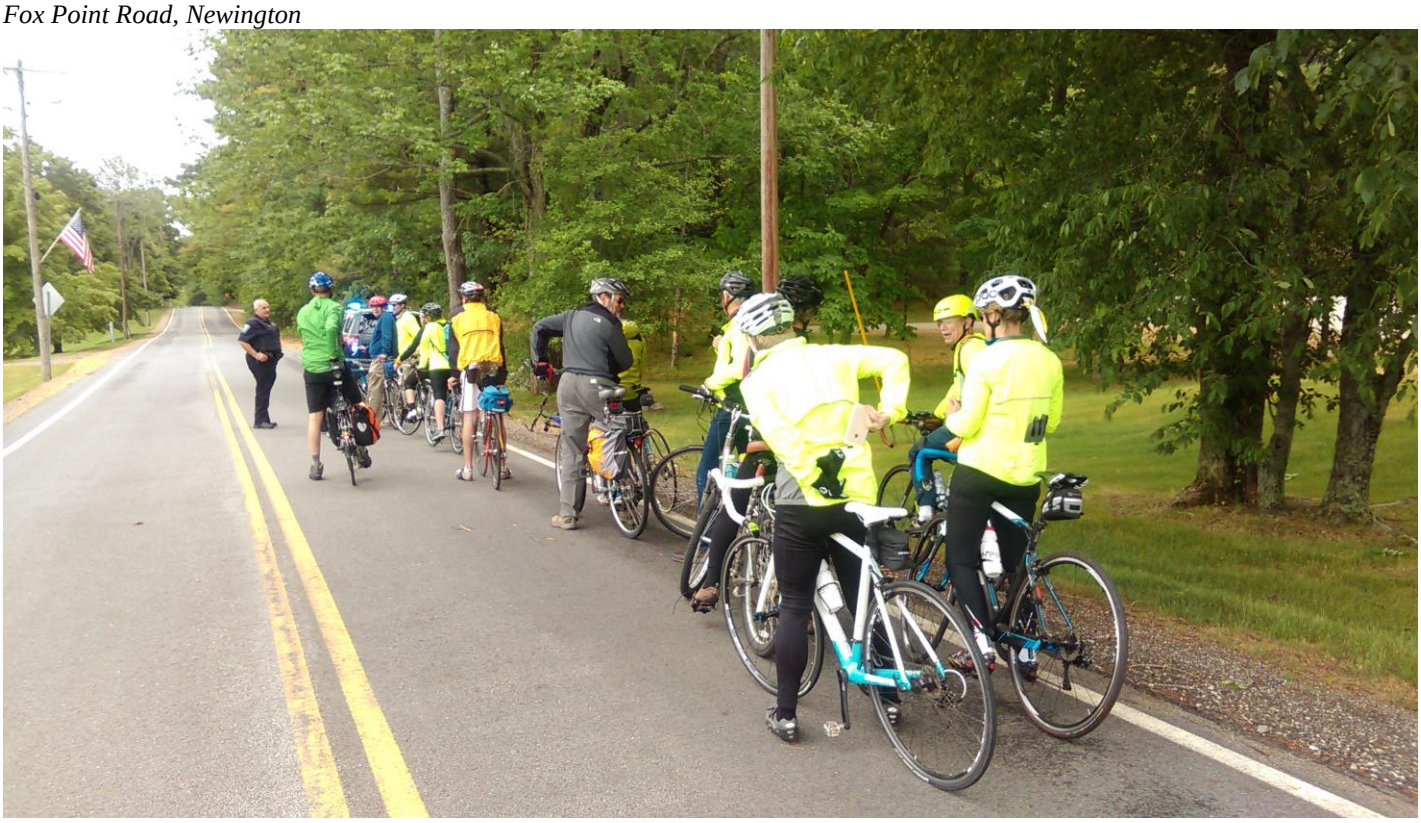
Contract S –General Sullivan Bridge Rehabilitation
Rehabilitates Existing 9-Span (1527 ft.) General Sullivan Bridge for Pedestrian and Bicycle Use
Tentative Advertising Date: Summer 2018
Tentative Construction: 2018 –2021
Temporary Shuttle Service proposed from Hilton Park Area in Dover to Shattuck Way Area in Newington during closure period.

For more information, visit and explore the project web site at http://www.newington-dover.com/

Comment: In lieu of a shuttle service, during the rehabilitation of the old bridge, is there potential for partial use of the new Spaulding Turnpike Southbound bridge for a temporary non-motorized river crossing option?

The group discussed the possibility of a regional collaboration to maintain in winter the path connecting Dover Point and Newington. Juliet Walker noted that Portsmouth would not be able to participate in any regional maintenance effort since Portsmouth crews are already committed to their own maintenance responsibilities within the City.

Fox Point Road, Newington



Newington Police and review participants discuss RSA 265:144, Special Rules for Bicycles and Mopeds, along Fox Point Road near the Newington Police Headquarters. The total width of the pavement from centerline to edge of pavement shown above is less than 14 feet wide. AASHTO suggests that motorists in this situation do not have enough room to safely pass cyclists - whether or not the cyclists are keeping right or riding single file. (See also NH RSA 265:143-a and NH RSA 265:22.)

Many participants were challenged by confusion over safe and efficient traffic operation and the signing in Newington that instructs that "BICYCLISTS MUST KEEP RIGHT & RIDE IN SINGLE FILE" (see picture on page 20, for example.)

RSA 265:144, by contradiction, requires that "Persons riding bicycles 2 or more abreast shall not impede the normal and reasonable movement of traffic and, on a laned roadway, shall ride within a single lane." RSA 265:144 also allows cyclists to use any part of the lane for a variety of reasons, including:

- *"When overtaking and passing another bicycle or any other vehicle proceeding in the same direction;*
- *"When preparing for or making a left turn at an intersection or into a driveway (see picture, page 21);*
- *"When proceeding straight in a place where right turns are permitted;*
- *"When necessary to avoid hazardous conditions, including, but not limited to, fixed or moving objects, vehicles, bicycles, pedestrians, animals, broken pavement, glass, sand, puddles, ice, or opening doors of parked vehicles."*

Comments:
Liz Durfee: Throughout the Pease Tradeport, way-finding signs are needed to navigate cyclists through the Pease Development roads and paths to Portsmouth. Tom Morgan explained that the Town continues to work toward establishing additional way-finding signs in Newington. The new bicycle path option suggested by Newington (along the west side of the Spaulding Turnpike connecting the Mitchell's Gas Station area to the new Woodbury Avenue extended across the Turnpike) would be more intuitive for commuters, which would address the difficulties of the "scenic" route, which requires travelers to turn right from Shattuck Road onto Nimble Hill Road, the left onto Fox Point Road, The enter the woods at the east end of Fox Point Road, then emerge from the woods to Cross Arboretum Drive, and then proceed east along Arboretum Drive.

Tom Morgan, Newington Planner discusses new roundabout under construction at Arboretum Drive

Tom Morgan explained that the Town of Newington proposed retaining a stretch of the old Arboretum Drive to serve as a bypass for bicyclists and pedestrians so as to allow them to avoid the roundabout. The Pease Development Authority (PDA), however, did not support the proposal.

Keith Cota and Tom Morgan briefed participants about ongoing negotiations between DOT and the Town of Newington to reserve part of the Spaulding's present southbound barrel between Mitchell's gas station (near the intersection of Shattuck Way and Nimble Hill Road) and Woodbury Avenue for a non-motorized path. When the turnpike's motor vehicle traffic is relocated easterly, there would then be ample space to construct a path. The new bicycle path route would connect more directly to the new roundabout via Woodbury Avenue than the current route along Fox Point Road and the path to Arboretum Drive. The new route would not be as scenic as the on-road option that goes by the Newington Fire Station, but it would be shorter and could be safer for bicycle commuters traveling between Dover and Pease/Portsmouth than any other option and could also help address Liz Durfee's comment about way-finding through Newington (See Page 7).

Comments:
Jon Mullen: New Spaulding interchange and roundabout will connect Arboretum Drive to a large increase in traffic volumes. Meanwhile, the shoulder just south of the roundabout is too narrow for the increased motor traffic and bicycle traffic to travel simultaneously in the same cross section along Arboretum Drive.

Picture Left: Typical sunken grate along Picture Right: *Arboretum Drive at Newington Street/Nashua Avenue intersection*

Arboretum Drive

Wary cyclists must move into the travel lane in order to steer clear of this sunken drainage grate (pictured above-left) along Arboretum Drive. The presence of sunken pavement around a drainage grate is one of many instances where RSA 265:144 provides that bicyclists may use the travel lane even when there otherwise appears to be adequate space for exclusive bicycle use. See also page 8 and 20 for many other lawful reasons why persons operating bicycles may not be able to simply "KEEP RIGHT."

Tom Morgan noted that there are several dozen such sunken catch basins in the Tradeport area. The picture above left taken along Arboretum Drive typifies the problem. Tom Morgan felt that the elimination of the curbs at some locations might alleviate the hazard, providing cyclists with a bail-out alternative to suddenly entering the travel lane. Tom suggested that curb removal could have the added benefit of reducing the volume of contaminated storm water that flows into the Great Bay estuary. However, the Pease Development Authority has not been receptive to the suggestion of removing any curbing. Also, FHWA recognizes that vertical curbing provides a traffic calming effect, thereby helping to achieve multi-modal networks (see http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/part01.cfm). Larry suggested that the drainage basin grates could be elevated toward balancing the efficiency of the drainage grate with traffic safety and convenience.

Cyclists discussed STOP sign compliance for Newington Street traffic approaching the Arboretum Drive/New Hampshire Avenue intersection (pictured above). Jon Mullen noted that Newington Street motorists often disregard the STOP sign approaching the intersection. The failure of approaching traffic to stop makes it especially hazardous for bicyclists traveling south along Arboretum Drive. Countermeasures may include a larger STOP sign for the Newington Street approach and heightened enforcement.

Lonza Biologics, International Drive, Newington

Along International Drive, participants demonstrate how bicyclists can ease employers of the burden of providing parking for employees.

New Pease Path at driveway to Grill 28/Golf course

Juliet Walker leads participants along the Grafton Avenue sidepath

Bus terminal at Portsmouth Park and Ride off Grafton Ave.


Covered bicycle parking accommodation at the C&J Terminal

The sidepath includes several road and driveway crossings that were signed with STOP signs The AASHTO Bicycle Facilities Guide notes that “attempts to require bicyclists to yield or stop at each cross-street or driveway are inappropriate and typically not effective.”

The C&J terminal includes covered bicycle parking. Because of the proximity and height of the cover, however, it appears that bicycles would still be subject to the weather. The existing bicycle rack was in failing condition due to severe rust on the rack mounting posts.

The C&J terminal is roughly 4 miles from downtown Portsmouth. A COAST bus trolley serves the C&J terminal with service to downtown Portsmouth and the Pease Tradeport. Headways are about 30 minutes during peak commuter hours and the trolley to downtown takes about 20 minutes. See http://www.coastbus.org/trolley.html .

Hampton Branch Crossing at Ocean Boulevard

Above: Juliet Walker, Rick Taintor and Scott Bogle discuss potential NHDOT purchase and City use of Hampton Branch RR from Pan Am.

The Department continues negotiations to purchase a portion of the Hampton Branch Railroad in Hampton, North Hampton, Rye, Greenland and Portsmouth. The picture above looks north where the trail will cross Ocean Road if a purchase of the corridor for trail use is completed. The trail will provide a path exclusively for non-motorized transportation, allowing bicyclists and pedestrians to avoid conflicts with motorists along US 1 and other busy highways connecting downtown Portsmouth with points south.

Northerly toward Downtown Portsmouth, safe at-grade trail crossings will be needed at Ocean Road, Banfield Road and Barberry Lane near Islington Street. An important component of the City's highway improvements, the City proposes a new road connecting Islington Street and Borthwick Avenue, which will connect trail users conveniently to destinations along Borthwick Avenue.

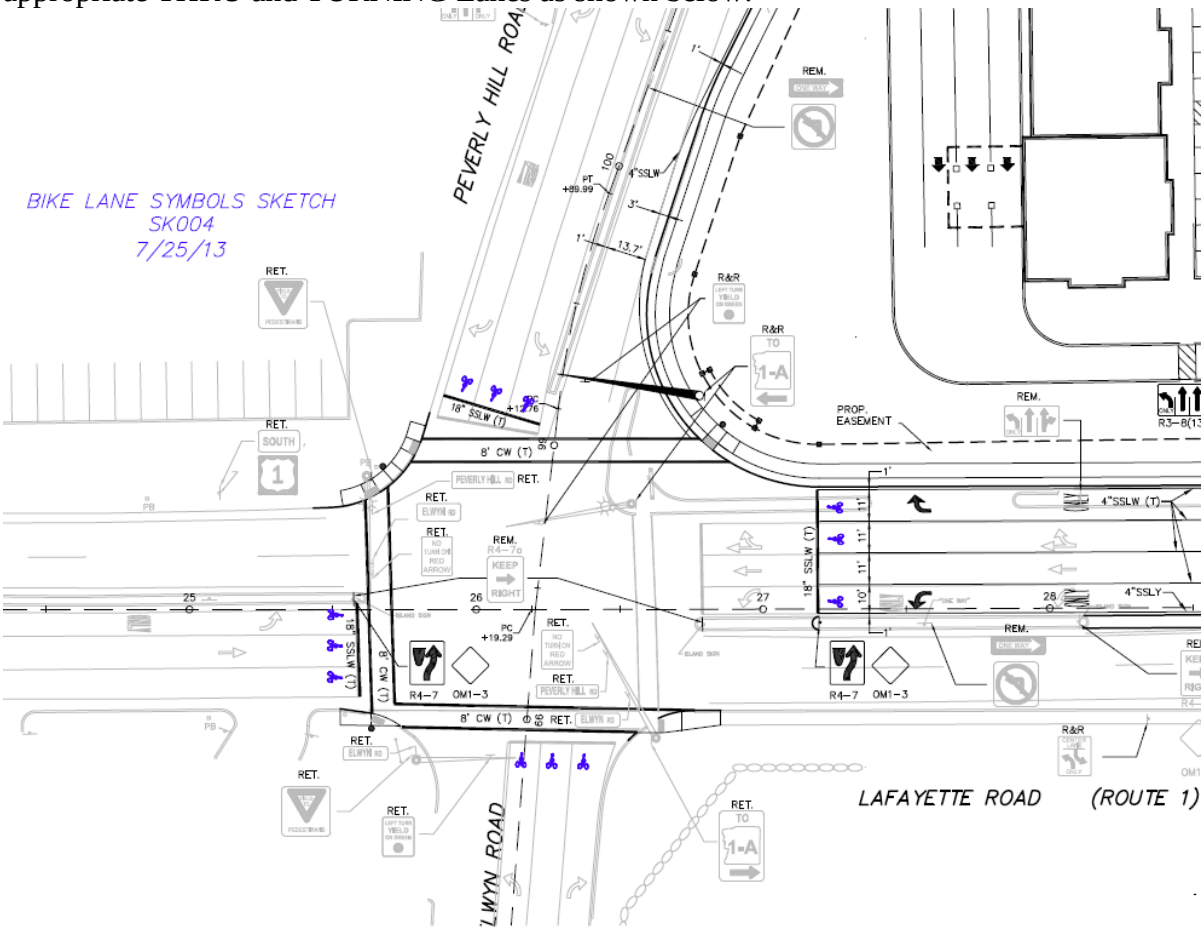
The trail will cross below NH 33 in an at-grade separated crossing.

The East Coast Greenway, an on-highway and off-highway bicycle route connecting Florida to Maine, is expected to designate its route along the Hampton Branch Railroad corridor across Ocean Road. The Seacoast Greenway, similarly, is expected to use the Hampton Branch Railroad route in the future.

US 1 at Elwyn Road intersection, Portsmouth

The above picture looks west toward US 1.

In connection with development of the parcels on the NW corner (Yoken's) and the SE corner (Wendy's), the US 1/Elwyn Road intersection was widened recently to increase capacity. The City proposed to provide shared lane markings and bicycle detection for turning lanes. The bicycle stencils would have guided cyclists into the appropriate THRU and TURNING Lanes as shown below:



NHDOT, however, did not allow the shared lane markings and the City removed the proposed shared lane markings from the plans. The Department indicated that the City should implement a US 1 corridor-wide bicycle lane enhancement rather than just marking one intersection with shared lane markings. Subsequently the City adopted its bicycle and pedestrian master plan which identifies the creation of bicycle and pedestrian infrastructure along US 1. Under current policy, NHDOT will not maintain any bicycle-specific lane markings in any case. Although the City's preferred plan was denied, the City subsequently worked with the Yoken's developer to create a bike lane along Peverly Hill Road, which is under the City's control.

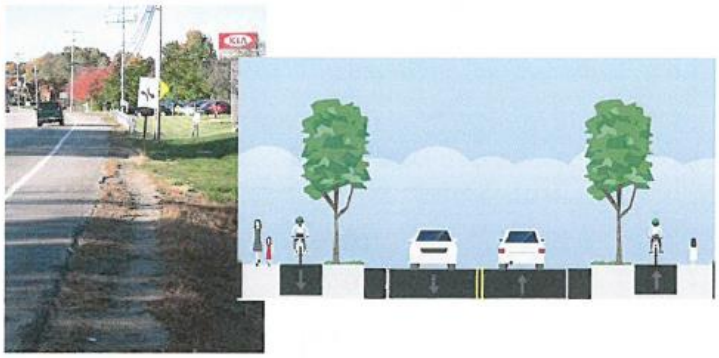
Concerns expressed to NHDOT about depressed drainage grates along the easterly curb line of US 1 just south of Elwyn Drive also motivated the stop along US 1. NHDOT Maintenance District 6 had set up cones as a warning of the sunken grates and District 6 Engineer Brian Schutt indicated that the grate and frame elevations would be adjusted.

Juliet Walker and Rick Taintor discussed the City's potential for improving US 1 from Elwyn Road toward Andrew Jarvis Road and downtown. One possible outcome is the construction of sidepaths as illustrated below.

TSM-PW/NH-13: US ROUTE 1 NEW SIDEPATH CONSTRUCTION

Department	Public Works
Project Location	US Route 1 from Andrew Jarvis to Elwyn Dr
Project Type	New Construction
Commence FY	2018
Ward	4,5
Priority	B (needed within 4 to 6 years)
Impact on Operating Budget	Minimal

Evaluation Criteria	Satisfy
Identified in Planning Document or Study: Bicycle and Pedestrian Plan 2014	Y
Improves Quality of Existing Services	Y
Provides Added Capacity to Existing Services	
Addresses Public Health or Safety Need	
Reduces Long-Term Operating Costs	
Alleviates Substandard Conditions or Deficiencies	
Provides Incentive to Economic Development	Y
Responds to Federal or State Requirement	
Eligible for Matching Funds with Limited Availability	



Description: This project calls for creation of a walkable and bikeable connection for neighborhoods and destinations along Route 1 through construction of ten to fourteen feet (10-14 ft) sidepaths on each side of road in available NHDOT Right-Of-Way. This will be a phased project, the first phase of which will extend from the intersection of Andrew Jarvis Dr to Elwyn Rd. Most of the project falls within NHDOT jurisdiction, and requires coordination and permission from the state agency to implement and maintain. A separate but related project would add ADA-compliant crosswalks and actuated pedestrian signals to cross Lafayette Rd at key intersections.

The City's list of infrastructure recommendations for US 1 below frames the City's priorities.

Project ID	Project Type	Area	Priority	Project Name	Project Description	Streets	Limit From	Limit To
1	Bike/Ped	2A/B:Lafayette	High	Hampton Branch Trail, Phase 2	Major regional trail connection, existing CIP project, pending State acquisition of former rail ROW. Trail provides long distance route from Hampton to Portsmouth.	Hampton Branch Trail	Greenland Line	NH33
1	Spot	4A/B:Greenland/ Borthwick, 2A/B:Lafayette	High	Hampton Branch Trail, Phase 2	Trail access location	Hampton Branch Trail	Banfield Rd	NA
1	Spot	4A/B:Greenland/ Borthwick, 2A/B:Lafayette	High	Hampton Branch Trail, Phase 2	Trail access location	Hampton Branch Trail	Ocean Rd	NA
2	Bike/Ped	2A/B:Lafayette	Low	Hampton Branch Trail connection at Ocean Rd	Widen sidewalk with reconstruction to create low-stress sidepath connection from Hampton Branch Trail to Lafayette Rd.	Ocean Rd	Lafayette Rd	Hampton Branch Trail
3	Bike	2B:Lafayette	Low	On-road route to Rye	Shared-lane markings provide guidance for experienced cyclists on constrained roadway.	Lang Rd	Rye Line	Lafayette Rd
4	Bike	2B:Lafayette	Low	Hampton Branch Trail connection at Heritage Ave	Bike lane retrofit on Heritage Ave. Long term, boardwalk/path connection from Heritage Ave at Banfield Rd directly to trail on undeveloped land.	Heritage Ave	Lafayette Rd	Banfield Rd
5	Bike/Ped	2A/B:Lafayette	High	Hampton Branch Trail connection at Constitution Ave	Sidepath with reconstruction in existing ROW - mostly undeveloped land.	Constitution Ave	Hampton Branch Trail	Lafayette Rd
6	Bike/Ped	2A/B:Lafayette	Med	Lafayette Rd alternative connection to Walmart	Bike lanes and sidewalks two sides on West Rd. Short sidepath connection to signed route on Water Country service road. New path connection punches through to Walmart parking lot from Constitution Rd.	Walmart Path, Water Country Rd, West Rd	Constitution Ave	Walmart Sidewalk
7	Bike/Ped	2A/B:Lafayette	High	Lafayette Rd Complete Street reconstruction	Based on NHDOT existing Rte 1 corridor study, construct sidepaths on each side of road in available ROW. No alteration of existing traffic patterns necessary.	Lafayette Rd	Rye Line	Andrew Jarvis Dr
7	Spot	2A/B:Lafayette	High	Lafayette Rd Complete Street reconstruction	Add ADA-compliant crosswalks and actuated signal to cross Lafayette Rd. Safe route to Portsmouth Early Education Program (PEEPS).	Lafayette Rd	Campus Dr	NA

Project ID	Project Type	Area	Priority	Project Name	Project Description	Streets	Limit From	Limit To
7	Spot	2A/B:Lafayette	High	Lafayette Rd Complete Street reconstruction	Add ADA-compliant crosswalks and pedestrian signals to all legs of intersections with sidepath reconstruction.	Lafayette Rd	Elwyn Rd	NA
7	Spot	2A/B:Lafayette	High	Lafayette Rd Complete Street reconstruction	Existing intersection improvement. Add ADA-compliant crosswalks and pedestrian signals with construction of sidepath.	Lafayette Rd	Heritage Ave	NA
7	Spot	2A/B:Lafayette	High	Lafayette Rd Complete Street reconstruction	Add ADA-compliant crosswalks and pedestrian signals with construction of sidepath and extension of Longmeadow Rd.	Lafayette Rd	Ocean Rd	NA
7	Spot	2A/B:Lafayette	High	Lafayette Rd Complete Street reconstruction	Add ADA-compliant crosswalks and pedestrian signals on traffic lights with sidepath construction. Remove slip lanes on White Cedar Blvd with reconstruction of Lafayette Rd.	Lafayette Rd	White Cedar Blvd	NA
7	Spot	2A/B:Lafayette	High	Lafayette Rd Complete Street reconstruction	Add ADA-compliant crosswalks and pedestrian signals to all legs of intersections with sidepath reconstruction.	Lafayette Rd	Wilson Rd	NA
8	Bike	2B:Lafayette	Med	Elwyn Park traffic calming	Bike boulevard with traffic calming at key intersections slows drivers and provides connection to Dondero School.	Harding, Rd., Hoover Dr, F.W. Hartford Dr, T.J. Gamester Dr., McKinley Rd	Lafayette Rd	Elwyn Rd
8	Ped	2A:Lafayette	Med	Elwyn Park traffic calming	Sidewalk with traffic calming at key intersections slows drivers and provide connection to Dondero School.	Harding Rd, Van Buren Rd, Filmore Rd, Adams Ave, Taft Rd, Wilson Rd	Adams Ave	Elwyn Rd
8	Spot	2A/B:Lafayette	Med	Elwyn Park traffic calming	Add curb extensions for pedestrian visibility.	Filmore Rd	Van Buren Ave	NA
8	Spot	2A/B:Lafayette	Med	Elwyn Park traffic calming	Add curb extensions for pedestrian visibility.	McKinley Rd	Van Buren Ave	NA
10	Bike/Ped	4A/B:Greenland/ Borthwick, 2A/B:Lafayette	High	Low-stress connection to YMCA and neighborhoods	Existing CIP project. Sidepath with acquired ROW to create critical north-south connection between Middle Rd and Lafayette Rd. Sidewalk on one side from Lafayette to Mirona Rd.	Peverly Hill Rd	Lafayette Rd	Middle Rd
11	Spot	2A/B:Lafayette	High	Elwyn Rd Improvements	Add actuated signal, and ADA-compliant crosswalks with sidepath construction on Elwyn Rd.	Elwyn Rd	Harding Rd	NA

*Looking south al**on**g Lafayette Road at Andrew Jarvis Drive (near Portsmouth High School)*

The City of Portsmouth recently made improvements and transformation of the US 1 area between Andrew Jarvis Drive and US 1. The removal of the flyover connecting Lafayette Road to US 1 opens up new opportunities for complete streets that accommodate pedestrians and bicyclists.

Juliet Walker noted that plans for a Safe Routes to School project along Lafayette Road/Middle Street from the entrance to high school to downtown are in progress. Funding will come from the City's Capital Improvement program and an SRTS grant. The project will include protected cycle lanes between Andrew Jarvis Drive and State Street at downtown. The pictures below document a demonstration project earlier in 2015 that placed cones and temporary markings along Lafayette Road/Middle Street between Andrew Jarvis Road and downtown.

Views along Middle Street during temporary protected bicycle lane demonstration project.

Looking south along State Street across from PaxWorld on Penhallow Street

Here along State Street, parking is at a premium.

Near Penhallow Street, Brian Fruh and Juliet Walker explain that cyclists commuting in milder seasons free up parking spaces when traffic and parking demand from all sources is highest.

As part of streetscape projects on Daniel Street and State Street and a subsequent grant from the Cooperative Alliance for Seacoast Transportation project State Street, the City installed 50 bicycle parking spaces, including stacked bicycle racks in the parking garage, and individual hoops and seasonal bike corrals.

Daniel St. at Penhallow Street

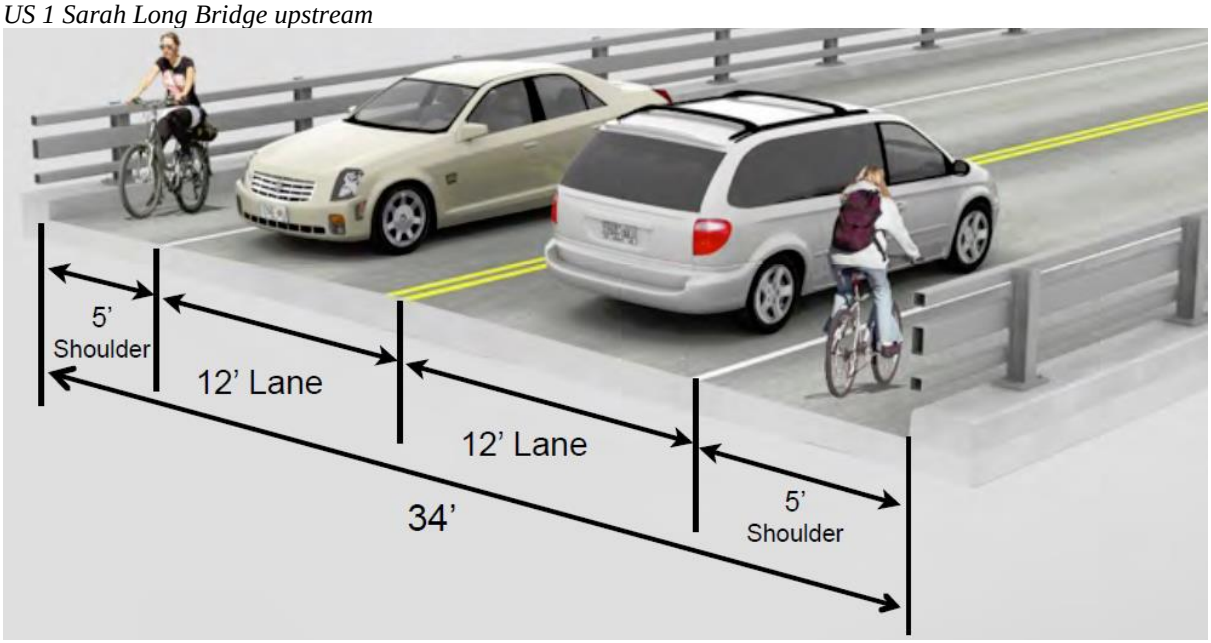
Liz Durfee demonstrates that it would take both sides of an entire city block in order to park a dozen automobiles.

US 1 Looking south from Kittery, Maine

NHDOT Chief Project Manager Keith Cota discusses with participants the recent Memorial Bridge Construction project.

The innovative lift bridge connecting Portsmouth, New Hampshire and Kittery, Maine across the Piscataqua River included 11-foot travel lanes, 5-foot bicycle lanes and 6-foot sidewalks on both sides of the bridge. The bridge serves as the New Hampshire-Maine connection for the East Coast Greenway. The City is integrating this facility and previously constructed bike lanes and sidewalks constructed on State Street and Daniel Street, which will improve the pedestrian access to Bow Street.

US 1 Sarah Long Bridge upstream



A new US 1 Bypass Replacement bridge from Portsmouth to Kittery is now under construction and will include bicycle lanes but not sidewalks. Maine DOT is the project lead (http://maine.gov/mdot/sml/). Bob Landry (271-2731) is the NHDOT liaison.

Looking North at Maplewood Avenue and Vaughan Street

Juliet Walker discusses the City's plans for Maplewood Avenue in the area near the railroad tracks

Within the block surrounded by Vaughan Street, Maplewood Avenue, Deer Street, Russell Street and Green Street, the City has approved a 500-space parking lot/hotel/Whole Foods Market/conference center. The developer is the owner of Sheraton Harborside Hotel.

To help mitigate for the additional traffic, the City will incorporate bicycle and pedestrian infrastructure into the plan. The plan includes designated bike lanes shared lane markings, a bike box for the Deer St approach to Maplewood Avenue and a roundabout for the Market Street/Russell Street intersection. From the intersection at Vaughn Street, Maplewood Avenue will include bicycle lanes. The project will construct sidewalks across garage entrances without ramps, thereby requiring the driveway entrances to ramp up to the sidewalk grade.

The parking lot at the corner of Maplewood Avenue and Raynes Avenue will be repurposed to mixed use development that will include 70 dwelling units, first floor retail space and covered parking.

The city proposes 600 additional municipal parking spaces at "Gary's Beverages" off Deer Street.

Looking North, Woodbury Avenue at Market Street intersection

This outer left turn lane pictured above is approximately 11 feet wide. In order for a lane to allow a motor vehicle to safely pass a single-file cyclist within the lane, the lane would need to be at least 14 feet wide. The bicyclists' operation illustrated above does not violate RSA 265:144 V. Had these participants shown above been " KEEP(ing) RIGHT & RID(ing) IN SINGLE FILE," the safety, efficiency and capacity of the intersection would be reduced. Participants operating two or more abreast maximizes the safety, efficiency and capacity of the intersection in the situation shown above. The situation pictured above is only one of many potential situations specifically cited in RSA 265:144 why a cyclist may not be "riding to the right." See also pictures and discussion on pages 8 and 10.

Portsmouth Planning Director Rick Taintor poses near Shaddock Way in Newington, just south of the General Sullivan Bridge

Rick Taintor encounters a "BICYCLISTS MUST KEEP RIGHT & RIDE IN SINGLE FILE" sign in Newington. Based on real-world traffic situations along most Newington highways, however, the sign serves no clear safety or operational purpose. On paved lanes with less than 14 feet of usable width, AASHTO notes for example, motorists can not pass bicyclists without encroaching into the other lane. The sign may inadvertently serve to encourage motorists to pass cyclists where it isn't safe or otherwise harass cyclists who are operating within the Rules of the Road and in the interests of safety. For more about cyclists lawfully using the travel lane, see the pictures and discussion on Pages 8 and 10.

Looking South along Boston Harbor Road toward the General Sullivan Bridge

Keith Cota discusses Newington Dover project features on the Dover side of Little Bay

Liz Durfee noted that westbound bicyclists emerging off of the General Sullivan Bridge and heading toward Dover via Hilton Park can not conveniently operate bicycles off the sidewalk because of the vertical curb that holds up the adjacent sidepath. Keith explained that this portion of the project is complete and remediation is not anticipated. Bicyclists can still operate, continuing west along the sidepath and turn east at the westerly limit of the curbed sidepath.

Looking east along US 4 at Back Bay Road, Dover

Last Stop before returning to UNH: The Back Bay approach to US 4 includes a post-mounted button in the island that can be used by bicyclists in lieu of detection. Signal detection equipment often does not detect bicycles at approaches to signalized intersections. Because of the volume of participating bicyclists on this occasion, however, the Boston Harbor Road approach seemed to detect and respond to cyclists.